Why Mocap is Hard II:

We're not done yet? Why sensing isn't everything…

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Once you have your observations, you're not done yet...

- Need to get data to usable form
- Motion Capture is only part of Animation from Observation

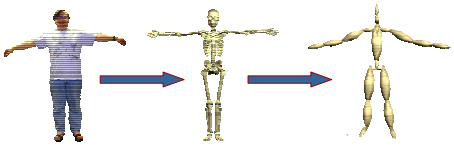
Key Points:

- Perfect sensing doesn't solve all problems
- Issues in representing and using motion
- A human is not a *simple* skeleton (abstraction)
- What is performed is (almost never) exactly what we want
  - Want essence of motion, not details
- We need to address these issues
- Planning and post-processing!

What if you had perfect sensors? (Lucky you!)

- Too much data?
  - Hundreds of bones, tissues and organs?
  - Millions of cells?
  - Vast numbers of atoms?
  - Don't need all this for animation
  - Need abstractions
- What is performed is never exactly what we want

Abstractions



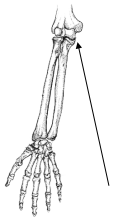
206 bones, muscles, fat, organs, clothing, …

206 bones, complex joints

53 bones Kinematic joints

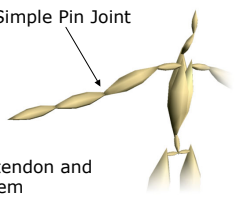
Abstractions vs. Reality (skeletons vs. humans)

Representation of complex human structure with varying degrees of simplification



Complex tendon and bone system

Simple Pin Joint



Standard simplified models of humans

- Small numbers of degrees of freedom for *gross* motion
- Articulated figures
- Kinematic joints
- Why this?

How to best match

- Can't be exact
- Something gets lost
  - Don’t want to lose what is important
- What is important?
  - Essence! (not details)
- Data provides details, essence is hidden inside

What is performed is almost never what we want

- Animation: bring something to life
  - means we want to change *something* about the performance
- Actor vs. character
- Restrictions of realism
- Performers aren't perfect
- Need for usable data (loops, reference poses, ...)
- Studio is not virtual world
- Motion re-use
  - sometimes we are stuck with what we have

Answers?

- Basic Strategies:

(why course focuses on planning and processing)

- get source as close to goal as possible (planning)
- post production is a major part
- be realistic in expectations
- Begin with the End in mind

Philosophical Tennets of Course:

- Solve Problems Earlier Rather than Later
- Build accurate model of what happens as intermediate step

- Not everyone believes this.
- Second bullet is especially up for debate
- We are all on the same side, and (to be honest) will not be fair to this opposing viewpoint